Integrated Development Platform for Customer and Aggregator Energy Management Systems (Grant Agreement No 101172675)

D7.1 Plan for dissemination, exploitation and communication

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1 Executive summary

This document outlines the strategic plan for communication, dissemination and exploitation of INDEPENDENT and its results, at project, pilot and partner level. The plan is supported by tools to evaluate the efforts and adjust if needed as well as internal procedures to ensure proper capture and efficient coordination of activities. The plan and activities will be continuously revised to fit the project development.

Communication, dissemination and exploitation should support the project vision, mission and objectives and maximise the impact of the results. The vision is to facilitate large-scale adoption of demand-side flexibility with the mission to develop an Integrated Development and Operations Platform (IDOP) which delivers automated, precise and reliable predictions of resource loads and flexibility, as well as optimal control strategies, offering automated integration with legacy systems and multi-market participation. The objectives entail 1) Enabling seamless development of standard-compliant Customer Energy Management Systems (CEMS) and their optimal aggregation, 2) Demonstrating the market readiness and cost-efficiency of the INDEPENDENT platform and 3) Supporting scalable deployment and sustainable market uptake of platform-based demand-side flexibility management systems. All these aspects fit into the larger EU framework of creating a more efficient, clean, sustainable, secure and competitive energy supply through smart integration of renewables, advanced interoperability and aggregation for flexibility provision. Activities should also reflect this wider perspective, showing how the project makes a difference to European society.

As a result, INDEPENDENT targets several external stakeholders grouped as technology, energy system, demand-side, regulatory and research actors, according to their stake in the INDEPENDENT vision and outcomes. They have been further prioritised to determine how best to plan activities and efforts. Especially the technology stakeholders are central target groups for INDEPENDENT as they ensure the qualification and further implementation of the platform usage and its outcomes and therefore should be managed closely in terms of communication, together with the standard organisations as adopters of INDEPENDENT standards extensions and specifications. Similarly, the consumers and prosumers in the pilots, i.e. the customers should be kept informed as they provide the flexibility and function as ambassadors of the INDEPENDENT solution. To reach its different stakeholders, INDEPENDENT uses various messages and channels such as website, social media, emails, newsletters, webinars, press releases, articles, promotion material, journals, meetings, workshops, conferences etc.

The communication and dissemination efforts act as a springboard for the broader application of the project's results. The core goal of exploitation in INDEPENDENT is to maximise the use of the project outcomes, empowering project partners to leverage these results for both non-commercial and commercial purposes. The INDEPENDENT reference architecture, along with the knowledge gained from the pilot installations around flexibility, will be shared widely across Europe. The energy and technical partners will drive the non-commercial replication of these results to a broad spectrum of energy stakeholders. Moving into the later stages of the project, the focus will be on commercial exploitation, following a clear set of steps to ensure that the project results are positioned for maximum impact in the marketplace. The steps include identification and evaluation of exploitable results, market analysis and value proposition development, business analysis, and finally creation of business plans, integrating both individual and collaborative replication and exploitation into the internal strategies of project partners.

Based on the analysis and strategic approach, a high-level plan has been created, detailing strategic objectives, channels and activities, complemented by pilot communication plans and plans for co-operation and standardisation activities to address the specific actions towards customers and collaborators.

To ensure that the project is going in the right direction, activities and their results are monitored and measured continuously throughout the project to using key performance indicators and other assessment points. Additionally, INDEPENDENT has established some internal procedures and partner responsibilities to guide the strategic approach and ensure effective and proper coordination, reporting and wide sharing of activities and central outcomes.

2 Introduction

The aim of communication, dissemination and exploitation is to help achieve the objectives of the INDEPENDENT project and maximise its impact. Communication entails promoting the project and its results to multiple audiences and the public, emphasising the added value that the project brings in a clear manner and using multiple channels to reach people. Closely related is dissemination which concerns making the results of the project public so that others can benefit from them. Communication and dissemination are closely linked with exploitation which is making concrete use of the results for commercial or knowledge advancement purposes by project partners or facilitate use by stakeholders outside through replication and training tools.

The obligation to communicate (promote) the project, disseminate (share) and exploit (make use of) its result is part of the Grant Agreement between INDEPENDENT and the European Commission.

2.1 Purpose, context and scope

The purpose of this document is to outline the strategic plan for communication, dissemination and exploitation of INDEPENDENT and its results, at project, pilot and partner level. The plan is supported by tools to evaluate the efforts and adjust if needed as well as communication procedures to ensure proper management and efficient coordination. The plan and activities will be continuously revised to fit project development.

The deliverable is part of WP7 Impact Creation and tasks T7.1 Communication and dissemination and T7.2 Exploitation and innovation management. The deliverable also touches upon T7.4 Co-operation and standardisation as it includes a plan for cooperation with related EU projects and standardisation bodies.

In terms of T7.2, this document contains the methodology to be used in the identification, documentation and management of results. The results of this process will be reported in the deliverable D7.3 Report on IPR management and exploitation (M36). In terms of T7.4, the cooperation activities will be documented in D7.5 Report on co-operation and standardisation (M36) whereas the promotional and sharing activities are documented in D7.2 report on dissemination and communication activities in M36.

2.2 Content and structure

The strategic framework for communication, dissemination, and exploitation is analysed in Chapter 3, to extract the objectives, stakeholders and the influencing factors. Based on this analysis, the strategic approach is specified in Chapter 4 which entails a prioritisation of stakeholders, progressive increase of activities and description of messages and chosen channels. The exploitation roadmap is also presented together with the methodology for identification and management of results.

An overall planning view is presented in Chapter 5 supplemented by pilot communication activities and plans for co-operation.

Chapter 6 details how the impact of communication and dissemination is assessed. Finally, Chapter 7 covers internal communication and coordination aspects, outlining also the role of the individual partners in terms of communication, dissemination and exploitation.

3 Analysis

3.1 Project framework, vision and mission

As part of Horizon Europe Work Programme for Cluster 5: Climate, Energy and Mobility, INDEPENDENT is contributing to the objective of a "more efficient, clean, sustainable, secure and competitive energy supply through new solutions for smart grids and energy systems based on more performant renewable energy solutions" (EC, 2021, p. 77). Specifically, as a project within the call for Energy Management Systems for flexibility services, INDEPENDENT is supporting the necessary modernisation of the energy system, by enabling smart integration of renewables in buildings and industrial sites, and by realising aggregation of multiple Energy Management Systems to provide flexibility services, demonstrating advanced interoperability of different data sources and formats.

The vision of INDEPENDENT is to facilitate large-scale adoption of demand-side flexibility and thereby help solve the current challenges of unpredictable renewable energy resources, difficulty of integration with legacy systems in a cost-efficient manner, and reduced benefits in trading flexibility due to market silos that confine flexibility to a single market. To overcome these issues, the mission of INDEPENDENT is to develop the IDOP which leverages advanced hybrid-modelling and neural network technologies to deliver automated, precise and reliable predictions of resource loads and flexibility, as well as optimal control strategies. The platform offers automated integration with legacy systems and enables multi-market participation using probabilistic forecasting and bidding. Thus, it can be used by technology and solution providers and their customers to gain from flexible energy use as well as benefit the energy system and grid in general.

The INDEPENDENT platform consists of two main packages dedicated to the development of Customer and Aggregator Energy Management Systems (CEMS and AEMS), and a package to support efficient deployment and secure operations of the systems, with data spaces for sharing data between stakeholders and with tools for planning investments. Each module in the CEMS and AEMS packages is designed to provide an open interface and be deployed as a microservice, making it easy to integrate and deploy.

Interoperability and replication are backed up by full compliance with demand-side flexibility management standards, including the EN 50491-12 and IEC 62746 standard families and the Smart Applications REFerence ontology (SAREF). Additionally, Gaia-X-compatible data spaces are provided to govern building and site data. Designed for seamless integration with existing smart appliances, energy management systems and aggregation platforms, the platform thus ensures straightforward adoption by technology providers and operators, facilitating increased cooperation and innovation.

To ensure that the platform will be usable and useful, four pilot sites will develop, validate and qualify the platform, involving the central stakeholders: aggregators, energy management service companies, smart appliance manufacturers and their customers. A broader market uptake and adoption of platform-based CEMS/AEMS services, are promoted through business models, roadmaps and recommendations. Similarly, the results of the standardisation work are channelled to relevant standardisation bodies.

All of the above encompass the INDEPENDENT vision of the platform as a key tool for development of next-generation, demand-side flexibility solutions that support clean, efficient, secure, sustainable and competitive energy supply.

3.2 Project objectives and targets

To realise the vision and mission of the project, specific project objectives have been established with related performance targets. The objectives and related targets can be summarised in terms of design, validation and market objectives.

Design objectives:

- Design a common architecture and a framework for secure & trust management and validation complying with demand-side flexibility and security standards and GDPR
- Enable seamless development of standard-compliant CEMSs for buildings and industrial sites with targets related to:
    - Integrating with several smart appliance vendors and building and industrial EMS vendors

  - Increasing the accuracy and robustness of resource models, aggregated demand and flexibility forecasts
  - Covering 90 % of the available flexibility without sacrificing end user comfort
- Enable optimal aggregation of CEMSs for RES balancing while maximising the value of flexibility in multi-market operation, with targets related to:
  - Supporting several wholesale and flexibility markets
  - Increasing the profits from demand-side flexibility management with multi-market operation

Validation objectives:

- Validate the market readiness and cost-efficiency of the platform with large-scale pilots in four countries, connecting buildings and industrial sites into eight operational energy wholesale and flexibility markets, with targets related to:
  - Reducing development, deployment, and integration efforts
  - Making several data sources available via platform data spaces
  - Achieving satisfactory Return on Investment in business models

Market objectives:

- Support scalable deployment and sustainable market uptake of platform-based demand-side flexibility management systems in different market settings and business cases, with targets related to:
  - Total volume of buildings managed by platform-based CEMS: 200.000 m3
  - Total amount of flexible capacity available for RES balancing: 1,4 MWh
  - Annual energy cost reductions for consumers with CEMS: 20 %
  - Several Energy Management Service companies and aggregators utilising the platform
  - Achieving TRL-level 8 for platform and platform-based CEMS/AEMS

3.2.1 Communication, dissemination and exploitation objectives

Successful achievement of the project objectives and targets will demonstrate the envisioned capabilities of the platform and will steer the communication, dissemination and exploitation activities, promoting and sharing the results and facilitating their utilisation. Specific objectives are to:

- Promote and share results via multiple channels to reach the target groups
- Facilitate exploitation with focus on particularly the smart appliance and energy management system providers for buildings, industrial sites, and aggregators as users of the platform.

Additionally, activities should facilitate a wider impact in terms of replication, standardisation and collaboration with the objectives to:

- Document best practices as roadmaps to facilitate market adoption and EU-wide upscaling and replication of platform-based, demand-side flexibility management systems
- Follow and contribute to standardisation activities with focus on the upcoming IEC 62746-4 standard
- Cooperate with initiatives, such as BRIDGE, Alliance for Internet of Things Innovation (AIOTI), ETIP Smart Networks for Energy Transition (ETIP SNET), and Smart Energy Demand Coalition (SEDC)

The following tables map the three overall project objectives to communication, dissemination and exploitation activity goals, showing how the latter will support the former. Who to target and how are presented in Sections 3.3 and 4.4, respectively.

Table 1: Enable seamless development of standard-compliant Customer Energy Management Systems and their optimal aggregation

Project targets	Communication, dissemination, exploitation goals
Comply with demand-side flexibility and security standards and GDPR	• Enable transparency of platform architecture, its modules and data exchanges and describe standards and privacy compliance • Ensure that standardisation results and contributions are made available • Ensure that the project scope, vision and results are readily available to all stakeholders
Support smart appliance vendors, building and industrial EMS vendors	• Explain the interoperability of the platform and how it can support and has supported various different legacy systems and solutions
Increase the accuracy and robustness of resource models, aggregated demand and flexibility forecasts	• Share the results from development work and implementations in the light of state-of-the-art • Present evidence of increased accuracy and robustness and make the results available
Cover 90 % of the available flexibility	• Share the results from project and pilot work
Support various wholesale and flexibility markets	• Describe the various markets being used in INDEPENDENT and communicate the results
Increase profits from demand-side flexibility management with multi-market operation	• Show the profit gained, highlight the investment tool, present case stories

Table 2: Demonstrate the market readiness and cost-efficiency of the platform

Project targets	Communication, dissemination, exploitation goals
Reduce development, deployment, and integration efforts significantly	• Demonstrate and inform about validation and cost-efficiency results from pilot sites • Provide evidence of efforts reduction
Make available substantial data sources via platform data spaces	• Promote the data spaces and show how they can be used
Achieve Return on Investment in business models	• Make available the business models and the calculations

Table 3: Support scalable deployment and sustainable market uptake of platform-based demand-side flexibility management systems

Project targets	Communication, dissemination, exploitation goals
Manage a substantial volume of buildings by platform-based CEMS	• Present evidence of volume managed and evaluation
Demonstrate a substantial flexible capacity available for RES balancing	• Share evidence of available flexible capacity and evaluation
Show energy cost reductions for consumers	• Present evidence of cost reductions, highlighting the wider benefits of the platform
Demonstrate professional use of the platform (EMS service companies and aggregators)	• Present case stories with professional use of the platform

Project targets	Communication, dissemination, exploitation goals
Achieve TRL 8 for platform and platform-based CEMS/AEMS	• Share recommendations and roadmaps for replication, including information about the innovation and business aspects

3.3 Stakeholder classification and communication need

The communication, dissemination and exploitation objectives reflect that several types of external stakeholders should be targeted, both those who will interact with and directly benefit from the platform but also those who will be affected by the results in general and who should be informed about the societal contributions of the project and be able to build on the results.

The following table shows the stakeholders targeted by INDEPENDENT, grouped according to their stake in the INDEPENDENT vision and outcomes.

Table 4: External stakeholders in INDEPENDENT

Technology Actors	Energy System Actors	Demand-side Actors	Regulatory & Research Actors
Energy management system (EMS) service companies	Aggregators (technical & market)	Consumers & prosumers	Standardisation organisations
EV charging service providers	Utilities	Resource owners	National and European regulators
Aggregation platform providers	Energy companies	Facility managers and industrial site operators	Scientific communities and researchers
EMS, Automation system & Smart appliance providers	Balancing responsible parties (BRP)	General public and press	Energy clusters

The Technology Actors cover the group of stakeholders who will utilise the INDEPENDENT platform to enhance their business offerings. The energy service companies can use the platform to provide standard-compliant CEMS to their customers, the aggregation platform providers can extend their platforms into standard-compliant AEMS that are interoperable with CEMS and provide optimal flexibility bidding in multi-market operation. Finally, the system and smart appliance providers, such as heat pump suppliers, can improve their offerings in a standard-compliant manner.

The Energy System Actors constitute stakeholders who will deliver or procure the flexibility services that the platform brings to the balancing of energy supply and demand. The utilities (TSOs, DSOs) and energy companies (suppliers, retailers) will benefit from the flexibility services (day-ahead and intraday bidding, balancing markets, congestion management, imbalance management, peak load reduction etc.) provided by the platform-based CEMS and AEMS. The utilities can use the flexibility as a tool in the balancing demand with supply and securing supply, whereas the aggregators, energy companies and BRPs can use it to further develop their business.

The Demand-side Actors consist of stakeholders who invest in platform-based CEMS, monitor or are affected by the use, and who can influence their uptake. The energy customers (private, industrial, commercial consumers and prosumers) can be interested in services for several reasons such as energy optimisation and maximisation of benefits as well as environmental gains. The group also includes facility and industrial site operators who are responsible for monitoring and managing the electricity and heat of larger buildings. Finally, the general public is a stakeholder representing society as a whole, with a general interest in green energy, energy management and flexibility provision and as such influence the general acceptance of flexibility as a necessary premise in the changing energy landscape.

Finally, the Regulatory & Research Actors represent the regulatory and research framework in which INDEPENDENT operates and are important factors in maintaining a competitive Europe. The regulators can help remove central barriers preventing large-scale demand-side flexibility and thus help further advance the uptake of platform-based CEM and AEMS solutions. The standardisation organisations will have an interest in the INDEPENDENT work on demand-side flexibility management standards (EN 50491-12, IEC 62746 standard families, SAREF ontology), the security aspects and data spaces to further encourage interoperability, collaboration and innovation. The scientific communities and clusters that INDEPENDENT is part of will have an interest in the vision and outcomes of the project, collaborating on common issues and combining efforts to address these for a stronger impact. Similarly, the researchers can leverage on INDEPENDENT results to gain advanced knowledge on technology, societal and business matters.

Table 5 maps the external stakeholder groups with their communication need, indicating what information should be communicated.

Table 5: Stakeholder group, interest and communication need

Group	Role	Interest in INDEPENDENT	Communication need
Technology Actors	Develop and sell energy-and flexibility-related smart appliances, management systems & services and platforms, targeted home, building & industry owners and aggregators Qualify INDEPENDENT platform-based services in terms of cost-efficiency and market readiness	Understand how the platform can help improve current offerings or develop new solutions The advantages of integrating the platform to develop standard-compliant CEMS and AEMS and the business opportunities	Inform about the platform, its functionalities and benefits Explain the platform's interoperability with different legacy systems, solutions and markets. Present relevant pilot case stories with evidence of increased accuracy & robustness of models, forecasts and reduced efforts Present the investment tool, business models and pilot case stories with evidence of profit gained and customer cost reductions
Energy System Actors	Produce, distribute, buy, sell and balance energy Pool and sell flexibility Qualify INDEPENDENT platform-based services in terms of market uptake	Interest in the flexibility services provided by platform-based CEMS and AEMS for balancing purposes or multi-market participation	Present the flexibility potential gained from buildings and industry and interoperability with various wholesale and flexibility markets, including TSO/DSO cooperation Present pilot case stories with evidence of volume managed and available flexibility capacity Share business models, recommendations and roadmaps for replication, including information about innovation and business aspects, with evidence of benefits gained in selling and procuring flexibility

Group	Role	Interest in INDEPENDENT	Communication need
Demand-side Actors	Consume and produce energy, offer flexibility Monitor and manage energy use of buildings and sites with reasonable comfort level change Validate INDEPENDENT services in terms of energy optimization	How to optimise energy and goals (e.g. sustainability, CO2, efficiency) through the use of platform-based CEMS services Achieving the highest level of energy efficiency in a building/site with reasonable comfort level change How can INDEPENDENT help consumers to benefit from offering flexibility	Present the project vision and inform about participation and incentives Share evidence of cost reductions and energy optimisation with reasonable comfort level change, highlighting the wider benefits of the platform Present the pilot results and flexibility potential for a wider European awareness & impact
Regulatory & Research Actors	Lay out the legislative framework and budget, overcoming barriers preventing large-scale demand-side flexibility Identify standards gaps and encourage development of new technical standards, encouraging interoperability, collaboration and innovation Strengthen European leadership in innovative research & increase European competitiveness	Interest in the project's outcomes on demand-side flexibility and its management and contribution to strategic goals on interoperability and data sharing Gain knowledge from the project and enhance the impact by collaborating on common issues and combining efforts to address current challenges Build from INDEPENDENT results to further advance science and innovation	Make the project scope, vision and results readily available Inform about platform architecture, highlighting the interoperability, standards, security and privacy compliance Ensure that standards results and contributions are communicated Promote the data spaces, innovations, business models, roadmaps and recommendations for replication

In Section 4.1, a prioritisation of the stakeholders has been conducted to plan the communication, dissemination and exploitation efforts in the best possible way, considering the resources and influencing factors, which are presented in the following section.

3.4 Factors that influence communication, dissemination and exploitation

The communication, dissemination and exploitation of INDEPENDENT are affected by internal and external factors which are useful to consider and prepare for in the planning of activities. Figure 1 shows an analysis of factors influencing communication, dissemination and exploitation in terms of strengths, weaknesses, opportunities and threats (SWOT).

Figure 1: SWOT analysis of the factors affecting communication, dissemination and exploitation in INDEPENDENT

The results show that INDEPENDENT has the competences required for a credible communication and scientific dissemination of a high value, engaging all relevant business and energy stakeholders necessary for qualification of and further uptake of the platform-based CEMS and AEMS across Europe. The current societal and political framework offers unique opportunities for INDEPENDENT to have a say, create impact and strengthen European competitiveness.

The project should take care to think communication into the daily work, ensuring that results are visible and reach the target audiences throughout the lifetime of the project. Emphasis should be on the activities closest to the project goals and where it can make the biggest difference while maintaining the focus on the business potential that is imminent and viable.

4 Strategy

Based on the analysis of the project framework, its vision and mission mapped to communication, dissemination and exploitation objectives and target groups as well as factors influencing work, the following sections outline the strategic approach. The approach entails 1) a prioritisation of external stakeholders, 2) a progressive increase of activities, 3) a choice of messages, 4) a selection of channels and 5) a methodology and roadmap for exploitation.

4.1 Prioritisation of external stakeholders

To determine how best to plan communication activities towards the target groups identified in Section 3.3 and prioritise communication and dissemination efforts seen from a project perspective, it is helpful assess the power relationship and interest in INDEPENDENT.

Figure 2 shows a mapping of the stakeholders in terms of the power they have over project work and the interest in the work, and what kind of action is needed. The stakeholders are grouped into four categories, using the strategic management tool by Mindtools.com based on Eden, C. and Ackermann, F. (1998) and Mendelow, A. L. (1981):

- Players with high power and interest. They should be managed closely and be fully engaged, making sure they are satisfied with the level and quality of communication;
- Context setters with high power and less interest. They should be kept satisfied but not bored with the message;
- Subjects with low power and high interest. They should be kept adequately informed, as they might contribute with important aspects and advice;
- Crowd with low power and less interest. They should be monitored and receive relevant updates but no excessive information.

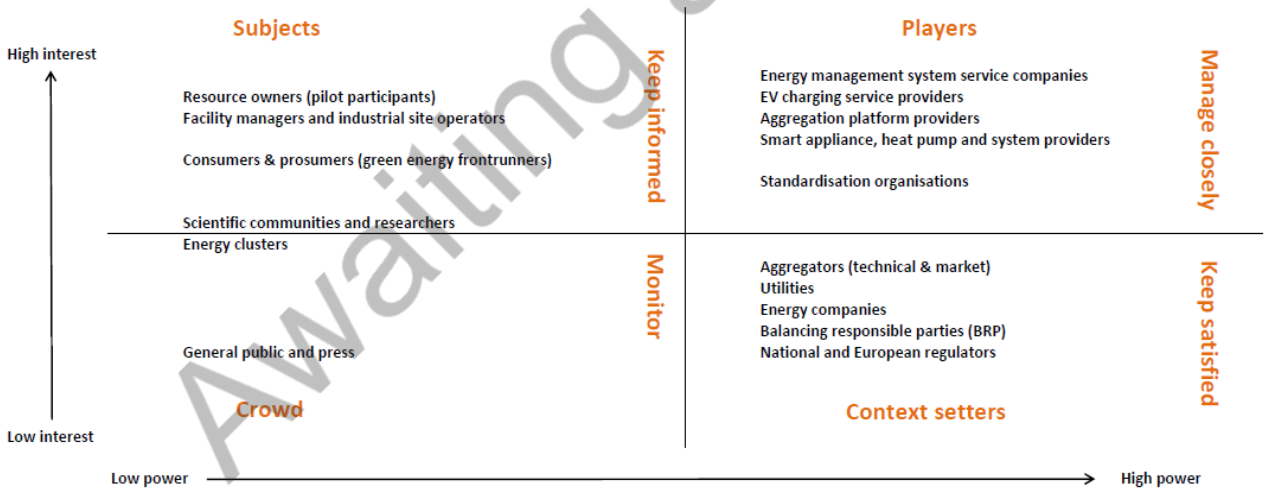

Figure 2: Positioning of stakeholders in terms of interest and power

The mapping shows that the technology stakeholders in the “Players” section are central target groups for INDEPENDENT as having a high interest in the platform’s potential and a high influencing power. They represent the platform users, ensuring the qualification and further implementation of the platform usage and its outcomes. Some of the stakeholders such as heat pump producers also represent the increasing electrification and flexibility provision in the transition to green energy. All should be managed closely in terms of communication and be fully engaged, together with the standard organisations as adopters of INDEPENDENT standards extensions and specifications.

The “Context setters” constitute the operational and regulatory frameworks that affect and assimilate INDEPENDENT work. As such they have a high influencing power and should be kept satisfied in terms of knowing about the results, lessons learned and recommendations related to flexibility capacity and market aspects in particular AEMS integration and DSO-TSO collaboration.

As less involved in the project’s work but with a high interest in the results from the project such as energy efficiency gains, reduction of greenhouse gas emissions and scientific work, the resource owners in the pilots, i.e. the customers, facility operators, consumers and prosumers that are green energy advocates or frontrunners as well as the scientific communities should be kept adequately informed. Especially the resource owners can offer valuable input and perspectives to the development of the platform as flexibility providers and potential ambassadors of the INDEPENDENT solution. Similarly, the scientific communities can build on the results from INDEPENDENT for general knowledge enhancement.

The “Crowd” group constitutes stakeholders with less power on INDEPENDENT work and with a medium to low interest in the project. They should be monitored and receive information when relevant. Nevertheless, the energy clusters that INDEPENDENT participates in should be able to follow the progress as close collaborators and are placed with medium interest since some of them are involved in the replication activities. Like the resource owners/customers, they can provide useful feedback.

4.2 Progressive increase of activities

The strategy is to generate a wide awareness of the INDEPENDENT vision and mission at the initial stages of the project, and then progressively increase activities as the pilots start and results emerge. At the later stages of the project, activities related to the final results are emphasised to achieve the best possible utilisation of the results by partners and people outside the project.

Figure 3 presents the approach from general promotional activities towards all target groups to the sharing and utilisation of final results.

Figure 3: Focus of project stages

4.3 Focus areas and messages

From the project objectives and knowledge of the stakeholders, communication and dissemination activities are planned with the following overall focus areas and messages:

Technology-developer and user-oriented messages

The focus is on the platform tools for cost-efficient development, deployment and operations of Customer and Aggregator Energy Management Systems, highlighting the automated integration with legacy systems and ease of use through automated modelling tools. Key part of the communication towards technology actors is also promoting the current and upcoming demand-side flexibility management standards which are critical for cost-efficient adoption of demand-side flexibility management at a large scale.

Business-perspective messages

The aim is to engage technology providers and their customers by demonstrating how to efficiently adopt CEMS and AEMS and utilise energy flexibility in buildings and industrial sites through standard-compliant interfaces supporting integration of legacy systems at the semantic level.

Solution-oriented messages

The focus is on the energy system actors and regulators and the complete standardised integration of demand-side flexibility from resources to the markets, enabling explicit demand response in the wholesale market, multi-market bidding and cooperation between TSOs and DSOs. In particular, recommendations on how to adapt the existing markets and market processes to better support demand-side flexibility services and TSO-DSO cooperation will be communicate to energy and flexibility market providers and regulation bodies.

Society-oriented messages

Focus is on the general demand-side audiences, highlighting the benefits of flexibility provision and how INDEPENDENT fits into this picture. A central message is that INDEPENDENT benefits all actors in the energy ecosystem, and specifically the consumer/prosumer customer who can maximise the optimisation of energy use by flexibility participation, and thereby not only save or earn money but also contribute to the smart integration of renewables and a more efficient and sustainable energy system.

4.4 Channels

To reach its target groups, INDEPENDENT uses various channels. They constitute website, social media, emails, communication material, newsletters, webinars, press releases, videos, articles, as well as workshops, meetings, conferences, exhibitions, journal and conference papers. The activities are supplemented by project partners' use of their own organisational channels to increase the stakeholder reach.

4.4.1 Project website

The project website (https://independent-energyproject.eu/) is the main digital channel for obtaining information about the project and will be updated and enriched continuously to make a (re)visit worthwhile.

The layout is mainstream with a traditional menu structure and images for immediate recognition of the project as an energy project dealing with renewable energy. Using the logo colours, the look and feel of the site gives an impression of earthy and natural solidity (green, blue) with a touch of lightness and new optimism (orange).

Although the project is highly technical in nature with the technology and energy system stakeholders as primary target groups, the aim is also to embrace a less specialised audience such as the demand-side actors by limiting specialised terms and complex language and adding glossary and illustrations for easier comprehension.

Apart from information provision and sharing of public documents and publications, the project website invites interaction through options to contact the consortium, sign up for newsletters and connect via social media.

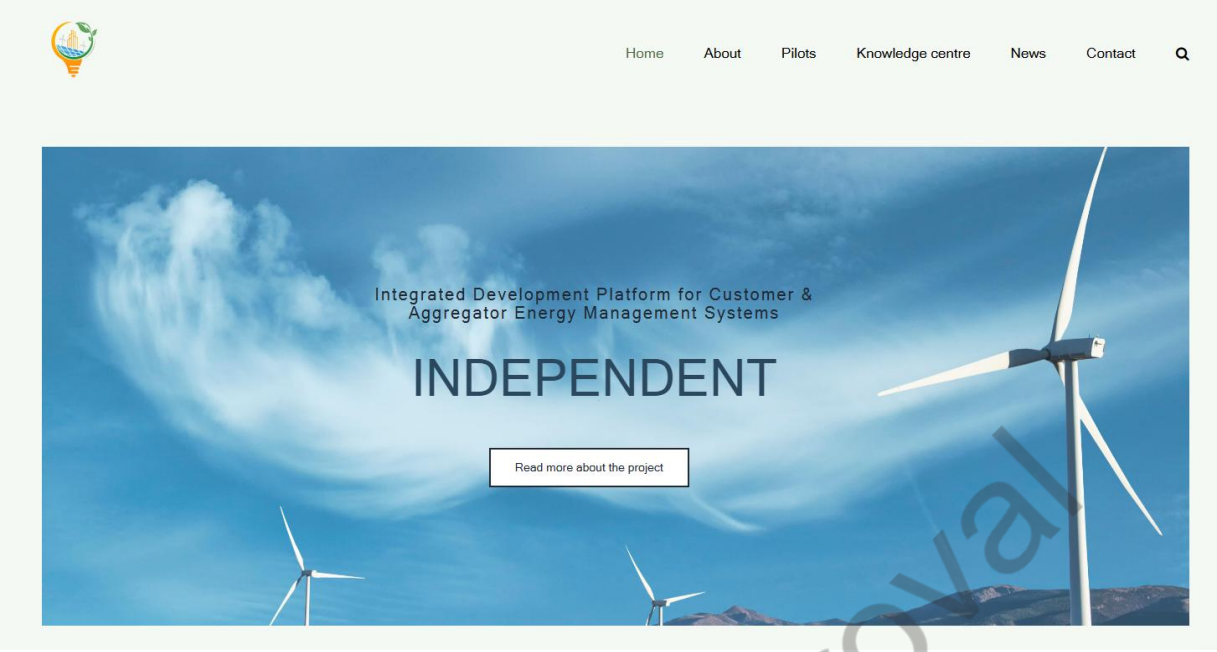

Figure 4: Front page of the INDEPENDENT website

4.4.2 Social media channels

LinkedIn is the main social media platform used in INDEPENDENT, offering good visibility, interaction and networking with the professional community online, especially the technology, energy, research and regulatory stakeholders. The platform will be used to connect with partners and their organisations, follow other projects and initiatives, share content, articles and invitations and present INDEPENDENT interest points and results, taking advantage of the viral branding capacities of the platform.

The INDEPENDENT page can be found at: https://www.linkedin.com/company/105072125

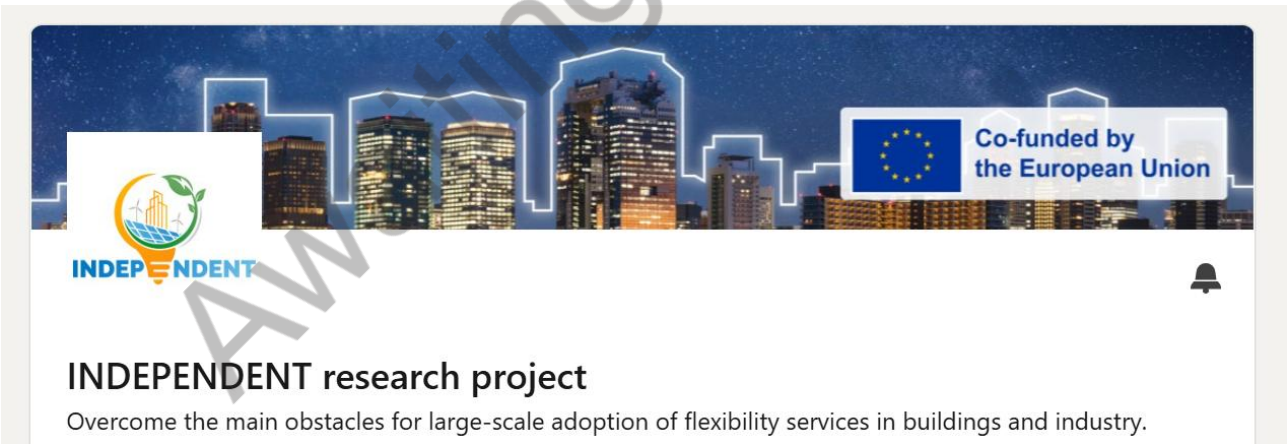

Figure 5: INDEPENDENT LinkedIn profile

In addition to LinkedIn, the project has created a profile on Bluesky which is a new microblogging platform, established in 2019 by the founder of Twitter, Jack Dorsey. Like LinkedIn, the target groups are the technology, energy, regulatory and research actors. The platform is expected to further grow due to its open and decentral principles, making it an interesting community to explore and help shape.

Figure 6: INDEPENDENT Bluesky profile

INDEPENDENT also plans to establish a YouTube account as a sharing channel for videos and webinars to reach a wider general audience and will consider other social media platforms if deemed relevant and valuable in terms of target group reach.

4.4.3 Other communication channels

Several other channels (written and visual) are used to communicate and engage with stakeholders and support partners in promotion activities. They include emails, newsletters, webinars, press releases, articles and promotion material (presentation templates, leaflet, poster etc.). The project will issue press releases at project launch and at any newsworthy topic or result of general interest. Regular newsletters will be launched, informing about key findings and activities during the project. Webinars will be held to share results and boost engagement and videos are created to support tradeshow participation and general promotion. The target groups of the activities cover all stakeholders, depending on the purpose, with most planned for engaging the technology, energy and regulatory actors. Project logo, presentation template and press release are available in Annex A.

In addition, partners will use their own channels to promote INDEPENDENT and engage their target audience.

4.4.4 Event and collaboration channels

The project plans to attend and organise several events (meetings, workshops, exhibition stands) to promote INDEPENDENT, establish contacts and network. Specifically, the project will organise workshops and demonstration events to showcase vision and outcomes and engage the technology and energy stakeholders. The workshops will be arranged within well-known European events for easier planning and greater reach. Additionally, a number of events, such as exhibition stands and meetings, are planned to engage the customers and demand-side stakeholders to demonstrate benefits of the new flexibility services.

To find synergies, share knowledge, plan common activities and contribute to ongoing work, INDEPENDENT will collaborate with similar projects, EU initiatives, clusters and standards organisations. This includes participation in all working groups of the BRIDGE Initiative, cooperation with relevant projects, such as GlocalFlex for replicability demonstrations, contributions to the Alliance for Internet of Things Innovation (AIOTI), European Technology and Innovation Platform Smart Networks for Energy Transition (ETIP SNET), and Smart Energy Demand Coalition (SEDC). Finally, INDEPENDENT will closely follow and feed into standardisation activities, especially IEC 62746-4, a key standard for demand-side flexibility management planned for the middle of 2025.

4.4.5 Scientific journals and conferences

To share INDEPENDENT knowledge results and enable others to benefit from them, the academic and technical partners will use journals and conferences as channels. The project will submit peer-reviewed papers to leading indexed journals and conferences.

Table 6 presents an initial list of targeted journals and publications, covering energy and power systems, computer science and social science.

Table 6: Scientific (energy and technical) journals and conferences targeted in INDEPENDENT

Scientific journals	Scientific conferences
IEEE Access	European Demand Response and Dynamic Pricing
Transactions on Smart Grid, Sustainable Energy and Power Systems	ACM e-Energy
Elsevier Energy and Buildings	ERRS International Conference on Energy Research and Social Science
Applied Energy	IEEE SmartGridComm
MDPI Energies	Conference on Technologies for Sustainability
International Journal of Electrical Power & Energy Systems	International Conference on the European Energy Market
Springer	ACM Trans. on Information Systems Security
Technology and Economics of Smart Grids and Sustainable Energy	UbiComp
IEEE Security & Privacy	Springer Security and Trust Management
Electronic Commerce Research and Applications	IEEE Int. Conf. on Automation and Computing
IEEE Transactions on Industrial Informatics	IEEE PerCom
Transactions on Industrial Electronics, Neural Networks & Learning Systems, and Dependable & Secure Computing	PES Innovative Smart Grid Technologies Conference Europe

4.5 Exploitation approach and methodology

In INDEPENDENT, our approach to exploitation is built on strong communication and dissemination efforts, which act as a springboard for the broader application of the project's results. The core goal of exploitation in INDEPENDENT is to maximize the use of the project outcomes, empowering project partners to leverage these results for both non-commercial and commercial purposes.

The INDEPENDENT reference architecture, along with the knowledge gained from the pilot installations around flexibility, will be shared widely across Europe. Our energy and technical partners will drive the non-commercial replication of these results to a broad spectrum of energy stakeholders. This includes sharing a comprehensive set of resources such as process methodologies, service models, open standards, application interfaces, teaching materials, evaluation results and other knowledge gathered throughout the project. Ultimately, the aim is to enable both individual and collaborative replication and exploitation of INDEPENDENT's results, integrating them into the internal strategies of our partners.

As we move into the later stages of the project, we will begin focusing on commercial exploitation, following a clear set of steps to ensure that the project results are positioned for maximum impact in the marketplace:

- **Identification and Evaluation of Exploitable Results**

  The first step is identifying which project results are most ripe for exploitation, classifying them into tangible results (services, products) and intangible results (knowledge, research outputs for academia). Tangible results will be examined through an IPR (Intellectual Property Rights) framework, which will identify the most exploitable components. Some of these results may not be individually exploitable but are essential to the functionality of the overall INDEPENDENT platform.

- **Market Analysis and Value Proposition Development**

  We will conduct market research to understand potential customer segments and explore new cooperation opportunities, ensuring that our value propositions align with market needs. Our market analysis will be guided by a desk research methodology. By tapping into existing research, industry

reports, and the collective expertise within the consortium, we will identify key market trends, customer profiles and potential competitors.

- **Business Analysis**

  A key component will be benchmarking the INDEPENDENT platform against competing platforms, providing a clearer picture of its competitive edge. Once the key market segments are identified, we will conduct a business analysis. This will include determining the unique selling points (USPs) of each product and performing a SWOT analysis to assess strengths, weaknesses, opportunities and threats. Based on these insights, we will prioritize the project results and market segments using a prioritization matrix, ensuring that we focus on the most impactful areas.

- **Creation of Business Plans**

  We will work with our partners to draft business plans that align with both the project's goals and the strategic objectives of each partner organization. Each business model will be visualized and refined using the Business Model Canvas, a tool that allows us to continuously adjust the model in response to market demands and changing circumstances. This flexible approach ensures that the business plans remain relevant and effective over time.

5 Overall plan and execution

An overview of the communication, dissemination and exploitation activities planned in relation to the strategic approach outlined in Section 4.2, and the channels presented in Section 4.4 is presented in Figure 7. The activities are aligned with the timing of central public deliverables.

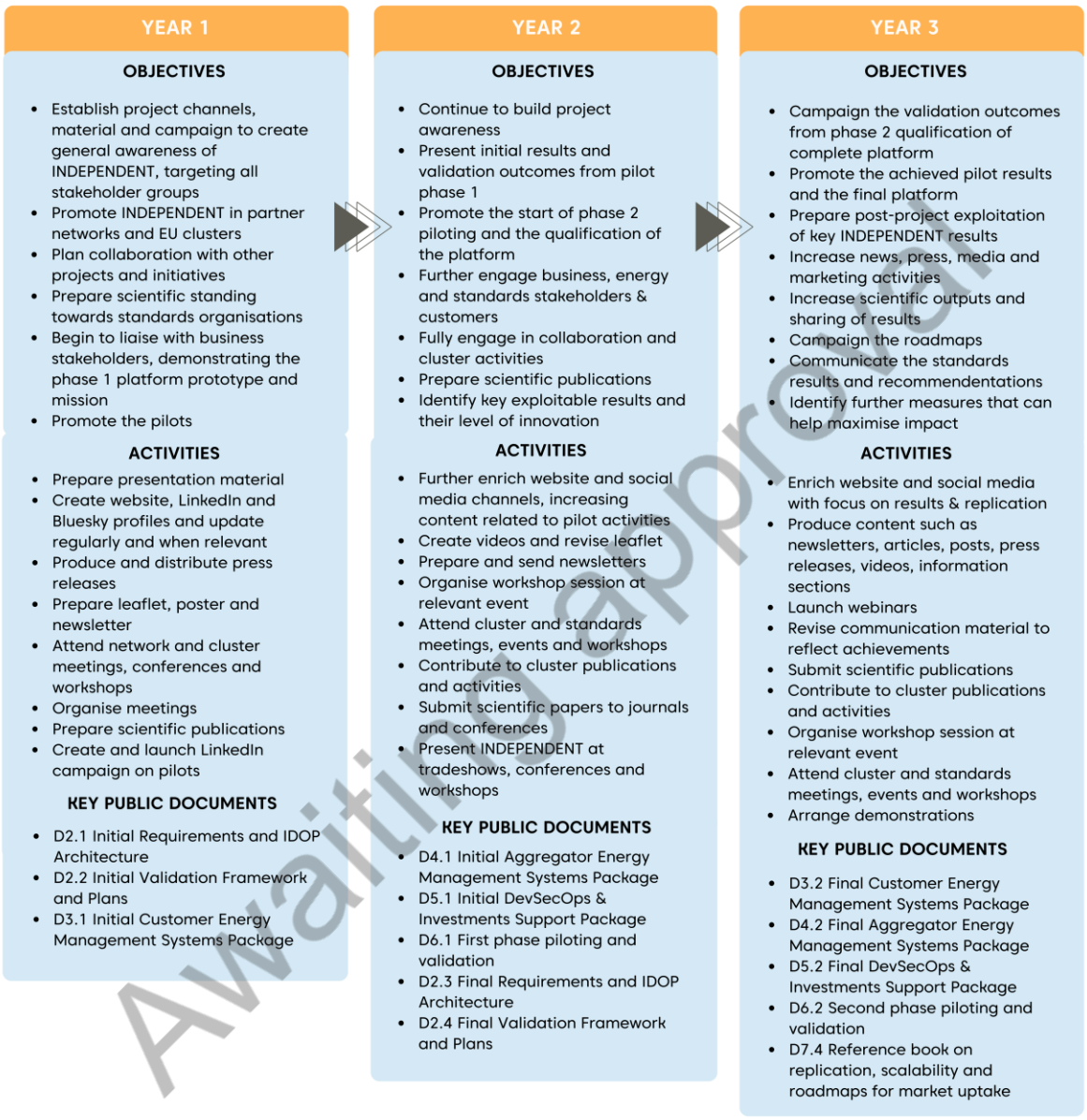

Figure 7: Overall activities planning

5.1 Pilot communication plans

The communication with customers and other stakeholders at the pilot sites is important to ensure a proper information level and successful pilot execution. As mentioned in the mapping of stakeholders in 4.1, the resource owners should be kept in the loop to ensure that what is developed and deployed remains relevant and useful. The following sections present the communication plan of each of the four pilot sites.

Finland

The Finnish pilot involves an apartment building, supermarkets and an industrial site and is operated by project partners Caverion and Volue, with support from VTT. Communication will primarily take place with the building owners and operators but also towards the market actors such as the Finnish TSO. The main purpose is to keep the resource owners informed about status and progress and involve the market actors in the testing and evaluation of flexibility activation. The table below shows the communication plan for the Finnish pilot.

Table 7: The Finnish pilot communication plan

Target group	Purpose	Form / channel	Timing
Apartment, supermarket & industrial building owners	Keep informed	Mails and meetings	Throughout the project lifetime
Building operators	Explain the technical aspects	Meetings	When necessary
Finnish market actors	Invite evaluation, present results and lessons learned	Press releases and articles in social media	Throughout the project lifetime

Slovenia

In the Slovenian pilot, communication is directed towards household and small business customers as well as the Slovenian market actors. In charge of communication are electricity retailer ECE and DSO Elektro Celje with support from AMIBIT, SmartCom and Institut "Jožef Stefan". Table 8 outlines the plan for the Slovenian pilot.

Table 8: The Slovenian pilot communication plan

Target group	Purpose	Form / channel	Timing
Small business customers	Recruit, keep informed, present initial simulations and final results, collect feedback	Face to face meeting, phone calls, mails, local fairs, partners web sites	Through the project lifetime
Household customers	Recruit, keep informed, present initial simulations and final results, collect feedback	Face to face meeting, phone calls, mails, local fairs, partners' websites	Through the project lifetime
DSO/TSO and other Slovenian market actors	Monitor, Invite evaluation	Through local media, DSO and retailer websites, social media channels, local educational webinars (optional) and local fairs	Through the project lifetime

Germany

In the German pilot, an industrial site and sample household customers (10) will be involved. The pilot is managed by Consolinno and fortiss with support from Bosch. The purpose of communication is to inform industrial and residential sites with relevant information about their energy system and the progress in the project. Table 9 presents the German communication plan.

Table 9: The German pilot communication plan

Target group	Purpose	Form / channel	Timing
Industrial site	Inform about progress Invite evaluation	Meetings (in person or online), E-mails	Whole project duration
Residential sites	Recruit, keep informed, invite evaluation, get feedback	Retail channels, trade fairs, social media, webinars	Whole project duration

Sweden

The Swedish pilot targets single-house families. Communication will take place between CheckWatt and NIBE and their household customers. Regulatory actors like Svenska Kraftnät will also be approached. The table below shows the Swedish communication plan.

Table 10: The Swedish pilot communication plan

Target group	Purpose	Form and channel	Timing
Households	Recruit, keep informed, invite evaluation and make them see their investments in heating systems and/or batteries as a potential flexibility for the grid and revenue potential	Social media like Facebook and LinkedIn, partner networks, website	Whole project duration
Installer partners	Educate and train. Make them more motivated to sell CheckWatt products and services	Newsletter, website, Education and training at Glava Center	Whole project duration
TSO, Svenska Kraftnät	Keep satisfied, influence	Press releases, LinkedIn articles	Whole project duration
DSO and Energy traders	Offer more flexibility resources to meet local flex demands	Press releases, LinkedIn articles	Whole project duration

5.2 Plans for co-operation and standardisation

As presented in Figure 7, collaboration with similar projects, EU initiatives, clusters and standardisation organisations will take place throughout the project lifetime. Initially, the project will reach out and attend cluster and network meetings for relation building, identification of synergies and common goals. From then, the relations will be fully explored, planning and contributing to common activities such as publications, promotion events and material. Likewise, INDEPENDENT will follow activities related to demand-side flexibility standards, identifying where the project can contribute.

Table 11 presents the projects, initiatives and organisations which INDEPENDENT plans to engage with and the objectives of cooperation.

Table 11: Cooperation with projects and initiatives

Projects/initiatives	Purpose	Co-operation objectives
BRIDGE EU Commission initiative uniting projects from Horizon 2020 and Horizon Europe with a focus on smart energy systems, in particular Smart Grid, Energy Storage, Islands, and Digitalisation Projects	Foster cooperation between energy projects, to find cross-cutting issues, do research and deliver recommendations to the EC	Participate in all four working groups, especially the data management and regulatory working groups to contribute and influence policies, especially with regards to standards Reply to requests and contribute to research, publications and recommendations Participate in events
ETIP SNET EU Commission initiative European Technology and Innovation Platform Smart Networks for Energy Transition	Gather experts within industry and research to guide research, development & innovation and provide policy advice	Participate in joint activities and events Reply to requests
AIOTI Public-private partnership Alliance for AI, IoT and Edge Continuum Innovation	Collaborate on converging technologies and enhancing the interoperability of AI, IoT, and Edge computing, while driving innovation, standardization, and ecosystem building in areas such as energy systems.	Monitor and contribute to energy and standardization working groups focused on IoT and Edge Computing infrastructures for energy flexibility Identify gaps, standards, and architectures to advance semantic and smart asset interoperability within AI, IoT, and Edge domains Define and promote architectural and interoperability patterns for data spaces, the computing continuum, and AI-IoT integration Enhance cybersecurity, resilience, and data governance in energy infrastructures Support energy communities and evolving market designs with IoT-driven solutions

Projects/initiatives	Purpose	Co-operation objectives
smartEN Industry group Smart Energy Europe, previously SEDC (Smart Energy Demand Coalition)	Promote demand-side flexibility in Europe	Promote the platform and tools for developing CEMS and AEMS with automated integration with legacy systems, enabling of multi-market participation and bidding, and integration of new flexibility resources like heat pumps
Relevant projects such as **GlocalFlex** and **RESONANCE**	Find synergies and collaboration opportunities between related projects	Explore possibilities of replicability through integration of solutions and organise common demonstrations between projects
Energy Nexus Cluster	Facilitate partnerships & knowledge exchange, promote innovation, create learning opportunities, support energy-sustainable practices	Organise joint communication and dissemination activities such as events to increase visibility Identify and explore synergies and heighten impact on these areas by combining efforts
Standardisation organisations in the area of demand-side flexibility management, such as the Finnish standardisation body SESKO	Develop standards for demand-side flexibility management increasing interoperability	Follow and push relevant results from the project to standardisation Share important information, references, and results within the consortium Identify emerging candidates for standardisation where the project can contribute, for example in the areas of privacy and security, SAREF interoperability cases, and data spaces

6 Impact assessment

To monitor the progress and effect of communication and dissemination activities and see if changes are needed, the project has established a set of indicators and assessment points.

Table 12 shows the indicators that INDEPENDENT has established for visibility (communication) and knowledge impact (dissemination), considering all stakeholder groups.

Table 12: Key performance indicators for impact creation

Visibility indicator	Target	Knowledge indicator	Target
Project website	>1.500 monthly views	Webinars	3
Social media	>1.000 followers	Scientific publications	6
Press releases	>2	Conferences/tradeshows	8
Promotional material (leaflet, posters, etc.)	>500	Workshops at relevant events	2
Newsletters	5	Demonstration events	3
Videos	5	Clustering & collaboration	Collaboration with >5 relevant Horizon EU projects Contributions in all WGs of the BRIDGE initiative

Apart from the indicators, INDEPENDENT will monitor and measure other activities where possible and relevant, all of which will be added in the overall assessment of reach and interest. They include downloads from the project website and publishing platforms, social media engagement level, subscription to newsletters, press coverage, stakeholder feedback and inquiries. The measurement will indicate what works and where to adjust the strategy.

The project will continuously visit the communication objectives in Section 3.2.1 and Table 5 to ensure that they are fulfilled.

7 Communication management

To ensure effective and proper coordination, reporting and wide sharing of activities and central outcomes, INDEPENDENT has established some internal procedures and responsibilities, supporting the general communication, dissemination and exploitation obligations mentioned in Chapter 2, and additional principles outlined in the project's management plan (D1.1 Project Quality Management Plan) and consortium agreement.

Reporting on activities

The project has established a common repository where partners can list activities and related impact to capture plans, communicate and coordinate activities and allow them to be shared to a wider audience. In general, partners are urged to think communication into their daily work, share planned activities and the good stories.

The role and responsibilities of each partner

All partners are involved in communication, dissemination and exploitation as part of their work with INDEPENDENT. To guide the strategic approach, each partner organisation has defined its specific role in terms of communication, dissemination and exploitation, as presented in Table 13.

Table 13: Role and responsibilities of each partner in terms of communication, dissemination and exploitation

Partner	Role in terms of communication, dissemination and exploitation
VTT Technical Research Centre of Finland	VTT is a non-profit organisation specialised in producing advanced technology innovations through research. Apart from managing the project, VTT leads the overall design of the platform and contributes to most of the R&D tasks. In INDEPENDENT, VTT will disseminate INDEPENDENT research results in scientific and industrial communities and scientific journals and participate in a range of activities such as events, workshops and webinars. VTT follows the IEC 62746-4 [2] standardisation through SESKO (Finnish standardisation body) and will contribute to the standardisation by providing feedback and lessons learned. The results from INDEPENDENT will be exploited to boost the technical expertise of VTT in the field of data sovereignty and governance, AI-based solutions for demand response and flexibility management and its offerings to industrial partners in Finland and beyond.
Institut "Jožef Stefan"	As the largest scientific research institute in Slovenia with the main goal to bridge between science, research, applications and industry. In the INDEPENDENT project JSI leads the work on Customer Energy Management System package and is as well active in other technical and piloting work packages and R&D tasks. In INDEPENDENT JSI plans to disseminate scientific and innovation results of the project through journal and workshop publications, education processes, research connections and national projects. In particular, results pertaining to the security & privacy design of the INDEPENDENT platform and Neural ODE toolbox will be utilised in the offering towards industrial partners in Slovenia and Europe.

Partner	Role in terms of communication, dissemination and exploitation
Consolinno Energy	Consolinno Energy is an innovative start-up that offers hardware technology, energy management systems and various software solutions for the energy & real estate industry. As manager of the German pilot and contributor to the R&D of the Customer and Aggregator solutions, leading the use case and requirements task, Consolinno will disseminate project results directly to the pilot participants, customers, and partners. Additionally, Consolinno will promote the project via its social media channels, e.g., LinkedIn, Instagram, and website. As an Energy Management System service provider and technical aggregator, Consolinno will exploit results to strengthen demand-side flexibility solutions towards customers.
Smart Com	Smart Com is a high-tech SME and a leading ICT partner of DSO/TSO operators in Slovenia, leading the piloting and validation work in INDEPENDENT and contributing to the R&D and business tasks. Smart Com aims to mostly contribute with industrial related communication and dissemination, i.e., presenting the project activities and results towards the industry through their digital channels, at fairs and conferences organised by EU institutions and national events. As a trusted partner of electric utilities, Smart Com is interested in developing commercially relevant solutions and knowledge/competences from the project, which can be offered to grid operators and service providers.
In-JeT	In-JeT is a consultancy company providing internet-based, people-targeted services, with expertise in the cross-field of technology and social science. In INDEPENDENT, In-JeT is responsible for impact creation, coordination of communication and dissemination activities and management of the communication and dissemination channels at project level which are presented in this document. In-JeT will also promote the project through its digital channels and network. As a SME, In-JeT will use the gained knowledge in its energy management consulting services, in terms of the societal and business aspects.
Caverion	Caverion designs, builds, operates and maintains intelligent and energy-efficient solutions for buildings, industries and infrastructures in Northern, Central and Eastern Europe. In INDEPENDENT, Caverion leads the tasks on user interfaces to the Customer Energy Management Systems and integrating testing and validation of interoperability with legacy infrastructure. Additionally, Caverion is responsible for the Finnish pilot. The knowledge gained will be disseminated to target audience including customers and potentially business partners. Caverion will promote the project in social media (LinkedIn). The knowledge gathered will be exploited for further research, development and replication of demand response and flexibility management services.

Partner	Role in terms of communication, dissemination and exploitation
CheckWatt	CheckWatt is developing and marketing solutions that help Swedish households and companies become smarter and more sustainable in their energy usage and enables a 100% renewable energy system through measurements, analysis, visualisation and control of energy assets. In INDEPENDENT, CheckWatt leads the work on the Aggregator Energy Management Systems Package as well as tasks on qualification of the platform-based demand-side flexibility systems and their large-scale market uptake. Additionally, CheckWatt participates in the general R&D work and manages the Swedish pilot. CheckWatt will disseminate project results directly to customers and partner networks, promote the project using social media and exhibitions like Elmia Solar and Villamässan. The results of the project will be used to enhance customer and grid flexibility services.
Elektro Celje	Elektro Celje is one of five Distribution Network Operators in Slovenia, ensuring reliable supply of electric power in its area of coverage. In INDEPENDENT, Elektro Celje leads the task on market adaptation and TSO and DSO cooperation and has a major role in the Slovenian pilot, supporting the development of the platform and integration into the distribution network. Elektro Celje will interact with its target groups which include the national regulator, DSO (DNOs), Aggregators and TSO, disseminating the Slovenian pilot results in relation to distribution grid results. Channels used are conferences and exhibitions in the field of power systems, specialised newsletters and magazines and its network initiatives with focus on driving the technological and regulatory developments in the area of Smart Grids. The results from INDEPENDENT will be used in the support of the local flexibility market for DSO (DNOs) in Slovenia and the cooperation between DSO and TSO for adapting current markets, and market processes to accommodate new flexibility services that will benefit both parties.
ECE	ECE is one of the largest suppliers of electricity, natural gas and biomass in Slovenia. It supplies households, small and large businesses. It also provides energy solutions in the fields of photovoltaics, energy storage and energy efficiency. In INDEPENDENT, ECE is responsible for the Slovenian pilot and the communication, being the connecting link to the industrial and household customers participating in INDEPENDENT and supporting the development, integration, marketing and replication of the platform. ECE will promote the project through the website and local fairs, and use emails, visits, local educational events (optional) to communicate with customers, Results will be used in the development of new energy market solutions targeted customers with a high flexibility rate.

Partner	Role in terms of communication, dissemination and exploitation
fortiss	fortiss is a research and transfer institute for software-intensive systems, including robust AI and intelligent infrastructures. In INDEPENDENT, fortiss leads the work on scalable deployment and sustainable market adoption support, contributing also to the R&D work. Additionally, fortiss manages the development of the applications in the German pilot. As a transfer institute, fortiss will mainly disseminate the scientific and technological innovations and results from INDEPENDENT to the relevant industries, producing scientific publications and conference presentations. Focus is on scientific and academic exploitation of the results as well as on technology transfer to industrial partners.
Reduxi by Amibit	Amibit is a high technology and R&D-oriented company offering innovative solutions for real-time monitoring and management of connected devices. In INDEPENDENT, Amibit leads the task on validation framework and is involved in the general R&D, validation and business work. Amibit also contributes to the platform deployment in the Slovenian pilot. Amibit will promote INDEPENDENT project on Amibit website and social media: Likendin and Facebook through different posts about INDEPENDENT project, ongoing activities, annual meetings, etc. The project results will be used to improve the Energy Management System solutions in view of flexibility and energy optimisation aspects.
Volue	Volue is a leading market service provider in the energy sector, specializing in advanced IT solutions and energy market services. The company's mission is to foster the evolution of energy systems by enabling innovative business models, supporting market development and contributing to the creation of more flexible, sustainable energy market structures. Volue provides an extensive suite of services that includes energy forecasting, energy trading, market monitoring, balance management, SCADA support, production planning and control, among others. In INDEPENDENT, Volue leads the task on exploitation and innovation management and is involved in the demonstration and qualification of the platform-based demand-side flexibility management systems, especially in terms of interoperability with aggregator management systems. Volue will disseminate project results to its target group including customers and business partners and promote the project using social media. Volue will use the gained knowledge in the product development to provide even better flexibility aggregation and market integration services to business partners in the energy sector.

Partner	Role in terms of communication, dissemination and exploitation
NIBE	NIBE provides a wide range of smart home appliances and connected devices for a sustainable future, such as heat pumps and solar panels. In INDEPENDENT, NIBE is leading the task on semantic adapters for Energy Management Systems and smart appliances for enhanced interoperability. Additionally, NIBE is contributing to the development, testing, validation and marketing of the developed solutions, supporting especially the Swedish pilot. NIBE will promote the project via its social media channels, e.g., LinkedIn and website. Additionally, NIBE will participate in relevant scientific publications as part of the consortium. The results will also be shared within the NIBE group of companies, all acting in the heating industry in one way or another. Results from INDEPENDENT will be used to increase demand-side flexibility options for products and gain knowledge on the changes needed to offer more flexibility in future heat pumps.
Bosch	The Bosch Group is a leading global supplier of technology and services, operating in Energy and Building Technology, Mobility, Industrial Technology and Consumer Goods. In INDEPENDENT, BOSCH is leading the tasks on the Resource Manager module and the business models and is contributing to the development, testing, validation and marketing of the developed solutions. Bosch will promote the project via its social media channels, e.g., LinkedIn and website. Additionally, Bosch will participate in relevant scientific publications as part of the consortium. The results will also be disseminated inside the Bosch Group between the different business units. The knowledge gained will be used to adapt, develop and roll out interfaces for heat pump control as well as energy management system and integration with aggregator systems, thereby improving energy management offerings to customers.

8 Conclusion

This plan serves as a reference point and guideline for the project in its efforts to make sure that the INDEPENDENT results are known, shared and live on.

As a dynamic document, it will be continuously revised to adapt to project development and stakeholder interaction. Similarly, channels and activities might change if deemed relevant and advantageous. The outcome of the communication, dissemination, exploitation and co-operation efforts will be reported at the end of the project (October 2027).

9 List of figures and tables

9.1 Figures

9.2 Tables

10 References

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11 Annex A: Project logo, presentation template and project press release

Project logo

Presentation template

Press release

Press release 06-01-2025

Facilitating adoption of energy flexibility services in buildings and industry

The EU project INDEPENDENT is developing an integrated software platform for seamless deployment of standard-compliant Customer and Aggregator Energy Management Systems in buildings and industrial facilities. The platform will be tested by four European pilots, involving energy service companies, aggregators, smart appliance manufacturers as well as their customers.

Unpredictable renewable energy resources, difficulties in integrating with legacy systems in a cost-efficient manner, and reduced benefits due to market silos that confine flexibility to a single market. These are current barriers to large-scale adoption of demand-side flexibility. To address these issues, INDEPENDENT is developing an Integrated Development and Operations Platform which leverages advanced hybrid-modelling and neural network technologies to deliver automated, precise and reliable predictions of resource loads and flexibility, as well as optimal control strategies. The platform offers automated integration with legacy systems and enables multi-market participation using probabilistic forecasting and bidding.

"Our goal is to make the platform interoperable with more than 40 energy management systems and 60 smart appliance vendors and cover 90 % of the available flexibility. Through our pilots, we aim to demonstrate how this flexibility can be applied for energy optimisation in various scenarios and in multiple markets, enabling the energy actors and their customers to benefit from flexible energy use", explains Project Manager, Markus Taumberger from VTT Technical Research Centre of Finland.

Tools for development, secure management and investment
The INDEPENDENT platform consists of two main packages dedicated to the development of Customer and Aggregator Energy Management Systems (CEMS and AEMS), and a package to support efficient deployment and secure operations of the systems, with data spaces for sharing data between stakeholders and with tools for planning investments. Each module in the CEMS and AEMS packages is designed to provide an open interface and be deployed as a microservice, making it easy to integrate and deploy.

Interoperability and replication are backed up by full compliance with demand-side flexibility management standards, including the EN 50491-12 and IEC 62746 standard families and the Smart Applications REFerence ontology (SAREF). Additionally, Gaia-X-compatible data spaces are provided to govern building and site data. Designed for seamless integration with existing smart appliances, energy management systems and aggregation platforms, the platform thus ensures straightforward adoption by technology providers and operators.

Testing the platform in practice
Four pilots in Finland, Sweden, Slovenia and Germany will test the platform in real settings and operational markets. They will harness an estimated total of 1,4 MWh flexibility capacity from industrial, commercial and residential buildings and sites, and connect to several energy wholesale, TSO, and DSO flexibility markets to demonstrate the platform-based CEMS and AEMS as complete and qualified systems.

"All in all, INDEPENDENT will aim to significantly reduce the development, deployment, and operational expenses preventing the broader uptake of demand-side flexibility services, demonstrating that demand-side flexibility management is indeed a sustainable business", concludes Markus Taumberger.

About the project
The INDEPENDENT project, *Integrated Development Platform for Customer and Aggregator Energy Management Systems*, is co-funded by the European Union's Horizon Europe Framework Programme for Research and Innovation, Project ID: 101172675. Duration: 01.11.2024 to 31.10.2027. Budget: EUR 6,5 million. The project brings together 14 partners from five European countries, including aggregators, energy management service companies, and two major home appliance manufacturers.

For further information, contact Project Manager Markus Taumberger from VTT Technical Research Centre of Finland: Markus.Taumberger@vtt.fi. Or visit the project at https://www.independent-energyproject.eu.